Checklist for Healthcare and Veterinary Departments

Items/Processes of Concern	Toxic Metal	Dangerous Waste	Preferred Alternatives and Best Management Practices[1]
Administration Office			• **See Administration and Facility Maintenance Department.**
Anesthetics			
Anesthesia **Containers** **Filters and media** **Gas emissions** **Liquid**		X	• **Non-barium-containing soda lime (carbon dioxide) absorbent.** • Purchase compressed gas cylinders from vendors and manufacturers who accept empty bottles for refilling. • Do not dispose of liquid wastes down the drain or in the trash. • Fit patient mask properly; turn gas supply off before disconnecting. • Use filters appropriate for the gases being used (i.e., charcoal filters will not trap nitrous oxide). • Use scavenging units to collect fugitive anesthetic gases. • Use and maintain low-leak equipment. • Protect against halogenated gas emissions, which can result in dangerous waste air emissions. Check for leaks, cracks, and deterioration in wall piping, tubing, connections, and scavenging units, especially on equipment over ten years old. • Monitor anesthetic levels in operating, recovery, emergency dental, and adjacent/other rooms receiving gases. • In case of liquid anesthesia spills, properly and immediately manage the waste and materials used in the cleanup as dangerous waste. • Contact local air authority for guidance on proper toxic air emissions control practices. • Establish dangerous waste designation, accumulation, and disposal procedures for waste filters, scavenging units, and spilled product. See Common Dangerous Waste Compliance Issues.
Dental			
Mercury amalgam **Other mercury-related wastes**	X	X	• **Replace mercury amalgam with composite fillings.** • **Install a mercury amalgam separator with a maintenance service contract to replace and recycle spent amalgam filter.** • Install a mercury amalgam separator. • Establish procedures and maintenance schedule to change out the separator filter and send for recycling. • Recycle scrap amalgam and amalgam captured in vacuum chair traps. • If spent separator filters and other waste amalgam is not recycled, it must be managed as dangerous waste. See *Best Management Practices for Dental Office Waste*, Ecology publication #06-04-007.

[1] Preferred alternatives are shown in **bold font**.

Items/Processes of Concern	Toxic Metal	Dangerous Waste	Preferred Alternatives and Best Management Practices[1]
Vacuum cleaning solutions	X	X	• **Use bleach-free and chlorine-free cleaning solutions. Bleach and chlorine can dissolve mercury from amalgam captured in chair trap filters.**
Clinics and Laboratories			
Blue wrap **Gowns and linens** **Instruments and devices** **Medical/surgical supplies** **Surgical packs** **Trays and pans** **Containers**			• Use vendor take-back programs. • Sell or donate excess durables to clinics, shelters, and foreign medical aid. • Improve waste segregation systems to increase recycling and reduce solid waste. • Buy and use durable products and materials instead of "use once and throw away" items.
Imaging/Radiology			

Chemical inventory
Fixer solution
Lead shielding (aprons, blocks)
X-ray film and processing
	X	X	• **Lead-free aprons without vinyl coverings. Examples include a blend of lead-free metal power and polymers. Tungsten and hydrogenated styrene-butadiene-styrene copolymer. Tungsten impregnated silicone.**
			• **Switch to digital imaging.**
			• Designate used/old items for reuse, recycling, or dangerous waste disposal.
			• Consider adapting lead shielding materials for other uses within Radiology.
			• Implement a silver recovery and recycling program:
			  ○ *Onsite*: follow treatment by generator guidance, test the discharge for dangerous waste designation, treat and discharge to sewer if permitted by local publicly owned treatment works.
			  ○ *Offsite*: Follow dangerous waste regulations.
			• Store chemicals, film, and paper properly for longer shelf-life.
			• Manage/treat spoiled or expired chemicals as dangerous waste.
			• Establish vendor take-back program for film, lead foil, and unused chemicals.
			• Recycle lead aprons, lead foil, and lead boxes. If not recycled, these items must be collected, managed, and disposed of as dangerous waste.

Items/Processes of Concern	Toxic Metal	Dangerous Waste	Preferred Alternatives and Best Management Practices[2]
Patient Medical Waste			
Blue wrap **Biomedical waste** **Medication** **Mercury-containing equipment** **PVC-containing equipment** **Waste tubing and IV bags** **Pharmaceutical containers**	X	X	• **Use polyvinyl chloride (PVC), Bis(2-ethylhexyl) phthalate (DEHP), and other phthalate-free tubing, IV and blood bags, gloves, and other medical products.** • **Establish a mercury-elimination program: buy and use mercury-free products and equipment, such as digital sphygmomanometers and thermometers, tilt and float switches, reed or displacement relays, thermostat probes and plungers.** • Donate clean, unused operating room (OR) supplies to clinics and relief organizations. • Eliminate unused items and those that expire quicker than the other items in custom and standard surgical packs. • Invest in reusable surgical case packs, eliminating the need for blue wrap and associated waste management efforts. • Use reusable/washable fabric that can be sterilized numerous times. • Dispose of biomedical wastes and sharps in appropriate containers. • Reduce and separate solid waste from biomedical waste, (i.e., dispose of preserved tissues as medical waste). • Use a formalin recovery unit to reduce costs and eliminate disposal risks. • Neutralize/dispose of used formaldehyde and formalin solutions or wastes as dangerous waste, not via trash, drain, or sewer. • Consider an onsite regulated medical waste treatment technology to reduce offsite disposal costs and support pandemic reaction plans/recovery actions. • Manage and dispose of any dangerous waste pharmaceuticals appropriately, including those containing mercury. Do not dispose to sharps bin, red bag, garbage, sewer, or septic tank. • Determine whether containers are "RCRA empty" and can be considered solid waste. • Determine if and how to dispose of waste tubing, IV bags, and waste pharmaceutical containers as dangerous waste. • For PVC-containing materials that can be disposed of as solid waste: when possible, dispose via landfill rather than high-temperature thermal destruction to avoid generating toxic air pollutants, such as dioxins. Where a landfill option is not available, use a high-temperature thermal destruction unit with proper pollution control systems. • Recycle uncontaminated blue wrap. • Place mercury spill kits in mercury use areas, if you do not use a cleanup contractor.

[2] Preferred alternatives are shown in **bold font**.

Items/Processes of Concern	Toxic Metal	Dangerous Waste	Preferred Alternatives and Best Management Practices[3]
Pharmacy			
Pharmaceutical waste **Silver-bearing pharmaceutical supplies**		X	• **Use silver-free medicines, pharmaceuticals, bandages, and medical devices when possible.** • Identify, manage, and dispose of dangerous waste pharmaceuticals properly. • Do not dispose to sharps bins, red bags, garbage, sewer, or septic systems. • Establish a "no sample" policy position. • Prescribe/dispense no more than is needed. • Don't purchase and prepare drugs in excess when pre-formulated, pre-mixed preparations, and single-dose vials are available. • Use oldest supplies first. • Dispose of unused, outdated, or spoiled chemicals or medications properly. • Return unused and unopened pharmaceuticals only when reverse distributors offer a credit. • Dispose of waste pharmaceuticals with silver concentrations of five parts per million (ppm) or more as dangerous waste.
Sterilizers			
Ethylene oxide (EtO) **Glutaraldehyde** **Formaldehyde** **Ortho-phthaladehyde (OPA)**		X	• **Select a safer disinfectant, such as hydrogen peroxide or peracetic acid.** • **Replace chemical sterilization with less-toxic processes, such as sonic sterilization, gas plasma, electron beam, microwave, or hydrogen peroxide whenever possible.** • **Use autoclaves or steam sterilizers if medical items are not moisture or heat-sensitive.** • Manage all wastes containing formaldehyde or glutaraldehyde as dangerous waste. • Ethylene oxide sterilization systems should use scrubbers, combustion units, or gas collection; keep area well ventilated and manage filters as dangerous waste. • Neutralize used cold sterilants and dispose to sewer (not septic system) if permitted by local public wastewater treatment authority.
General			
General inventory			• **Use Environmentally Preferable Purchasing.** • Review Material Safety Data Sheets (MSDSs) for hazardous substance information. • Properly store hazardous substances. • Review curriculum for potential hazardous substance reductions.
All generated waste streams	X	X	• **Use chemical inventory and tracking software to centralize product ordering, improve product tracking, storage requirement, waste management, reduce disposal of expired product, and minimize duplicate orders to prevent unnecessary disposal.**

[3] Preferred alternatives are shown in **bold font**.

Items/Processes of Concern	Toxic Metal	Dangerous Waste	Preferred Alternatives and Best Management Practices[3]
Spilled products **Unused and expired products**			• Identify all potential waste streams and establish designation procedures to determine if a hazardous waste or non-hazardous waste. • Implement dangerous waste designation, collection, accumulation, and disposal procedures for all waste streams. See Common Dangerous Waste Compliance Issues.
Batteries **Fluorescent lamps** **Mercury-containing equipment**	X	X	• **Use rechargeable batteries.** • **Use LED lamps when appropriate.** • **Use low-mercury fluorescent lamps.** • **Remove and/or replace mercury-containing equipment and recycle as Universal Waste.** • Implement a battery recycling program and recycle as Universal Waste. • Implement a whole-lamp recycling program and recycle as Universal Waste. • If not recycled as Universal Waste: collect, manage and dispose of as dangerous waste.
Computer and electronic equipment, and appliances	X	X	• **Use energy-efficient computer and electronic equipment, and appliances.** • **Use vendor take-back programs.** • **Surplus old equipment.** • **Recycle as Universal Waste.** • If not recycled as Universal Waste: collect, manage and dispose of as dangerous waste.
Other:			

Notes, Comments, Follow-up

Resources

Best Management Practices for Hospital Waste: https://fortress.wa.gov/ecy/publications/summarypages/0504013.html

Common Dangerous Waste Compliance Issues: http://www.ecy.wa.gov/programs/hwtr/P2/schoolsAndLabs/tool/dw_issues.html

Dangerous Waste Basics: http://www.ecy.wa.gov/programs/hwtr/manage_waste/DangerousWasteBasics.html

E-Cycle Washington: http://www.ecy.wa.gov/programs/swfa/eproductrecycle/

Environmentally Preferable Purchasing: http://www.ecy.wa.gov/programs/swfa/epp/index.html

Find a Hazardous Waste Service Provider: http://www.ecy.wa.gov/programs/hwtr/hwsd/index.html

Managing Pharmaceutical Waste: http://www.ecy.wa.gov/programs/hwtr/pharmaceuticals/index.html

Treatment by Generator: http://www.ecy.wa.gov/programs/hwtr/P2/schoolsAndLabs/tool/TBG.html

Universal Waste Rule for Batteries, WAC 173-303-573(2): https://fortress.wa.gov/ecy/publications/SummaryPages/98407a.html

Universal Waste Rule for Lamps, WAC 173-303-573(5): https://fortress.wa.gov/ecy/publications/SummaryPages/98407c.html

Universal Waste Rule for Mercury-containing Equipment, WAC 173-303-573(3,4): https://fortress.wa.gov/ecy/publications/SummaryPages/98407b.html